Hence Dr. Tiarks thinks it fair to conclude that the diameter of the parallel circle, in which the longitude is measured, has in the survey been taken somewhat too great, and consequently the earth's ellipticity greater than the truth. He remarks that the measurement of the spheroidal triangle concerned, determines only the actual flatness of the part of the earth's surface on which it is situated, and not the actual magnitude of the whole parallel, unless its curvature be supposed perfectly uniform, which we cannot assume with confidence; while on the other hand, if we compute the ellipticity from the result of the chronometrical determination, it becomes one 314th instead of one 150th, and agrees with the most accurate measurements obtained from different principles. The longitude of Falmouth is finally determined to be $20^m\ 11^{s\cdot}1$ of time, and that of the British Consul's garden at Funchal, $1^h\ 7^m\ 39^s$ W. of Greenwich.

Of the Effects of the Density of Air on the Rates of Chronometers. *By* George Harvey, *F.R.S.E. &c.* *Communicated by* Davies Gilbert, *Esq. V.P.R.S.* Read May 13, 1824. [*Phil. Trans.* 1824, *p.* 372.]

Among the sources of error to which chronometers are liable, the effect of the variable density of the medium in which the balance vibrates has been overlooked; the author therefore proposes to investigate the effects of diminished and increased pressure of transference from one to the other, and of the ordinary variations of atmospheric density upon the rates of chronometers. In respect to diminished pressure, he found that chronometers gained by being placed in air of less density than that of the ordinary state of the atmosphere, and that, on the other hand, they lost when subjected to air of greater than ordinary density. These experiments were made with a variety of chronometers, placed in the receiver of an air-pump, or in that of a condensing apparatus.

In respect to the influence of ordinary changes in the density of the air, the author remarks that pocket chronometers are more readily affected than box chronometers, but that they all exhibit an increased rate under diminished density, and *vice versâ*. The author shows that these changes in the rates, as observed in the air-pump and condensing apparatus, are independent of the changes of temperature, resulting from changes in the density of the air thus rapidly effected, and therefore proceeds to inquire into the actual cause of the changes which his experiments indicate; he refers them to an increase in the arc of vibration when the density is diminished, and to a diminution in the arc under increased density.